

MULTIMEDIA



UNIVERSITY

STUDENT ID NO

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# MULTIMEDIA UNIVERSITY

## FINAL EXAMINATION

TRIMESTER 2, 2015/2016

### TRS 2251 – ROUTING AND SWITCHING

(All Sections / Groups)

7 MARCH 2016

9.00 a.m. – 11.00 a.m.

(2 Hours)

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#### INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 6 printed pages including cover page with 6 questions only.
2. Attempt **FIVE (5)** out of SIX (6) questions. Marks and the distribution of marks for each question is given.
3. Please write all your answer in the Answer Booklet provided.

**Question 1 [10 Marks]**

- (a) Refer to the following exhibit.

```
Router> ??
Cisco Internetwork Operating System Software
IOS (tm) C2600 Software (C2600-I-M), Version 12.2(28), RELEASE SOFTWARE (fc5)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2006 by Cisco Systems, Inc.
Compiled Wed 27-Apr-04 19:01 by miwang
Image text-base: 0x80008080, data-base: 0x80A1FE00

ROM: System Bootstrap, Version 12.1(3r)T2, RELEASE SOFTWARE (fc1)
Copyright (c) 2000 by Cisco Systems, Inc.
ROM: C2600 Software (C2600-I-M), Version 12.2(28), RELEASE SOFTWARE (fc5)

System returned to ROM by reload
System image file is "flash:c2600-i-mx.122-28.bin"

cisco 2621 (MPC860) processor (revision 0x200) with 60416K/5120K bytes of memory

Processor board ID JAD05190MTZ (4292891495)
M860 processor: part number 0, mask 43
Bridging software.
X.25 software, Version 3.0.0.
2 FastEthernet/IEEE 802.3 interface(s)
2 Low-speed serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
16384K bytes of processor board System flash (Read/Write)

Configuration register is 0x2102

Router>
```

- i. Which Cisco commands is used to display the exhibit?
- ii. Identify SIX information that can be extracted from the exhibit.

[1 + 3 = 4 Marks]

- (b) What are the characteristic of flash memory?

[4 Marks]

- (c) List TWO functions of the login banner.

[2 Marks]

Continued ...

**Question 2 [10 Marks]**

Given the following IP address:

198.10.50.0/28

Find the following.

- (a) Subnet mask. [1 Mark]
- (b) Total number of subnets. [2 Marks]
- (c) Total number of usable hosts per subnet. [2 Marks]
- (d) Network ID, first usable host, last usable host and broadcast ID of the first five subnets.

Network ID	First Host	Last Host	Broadcast ID

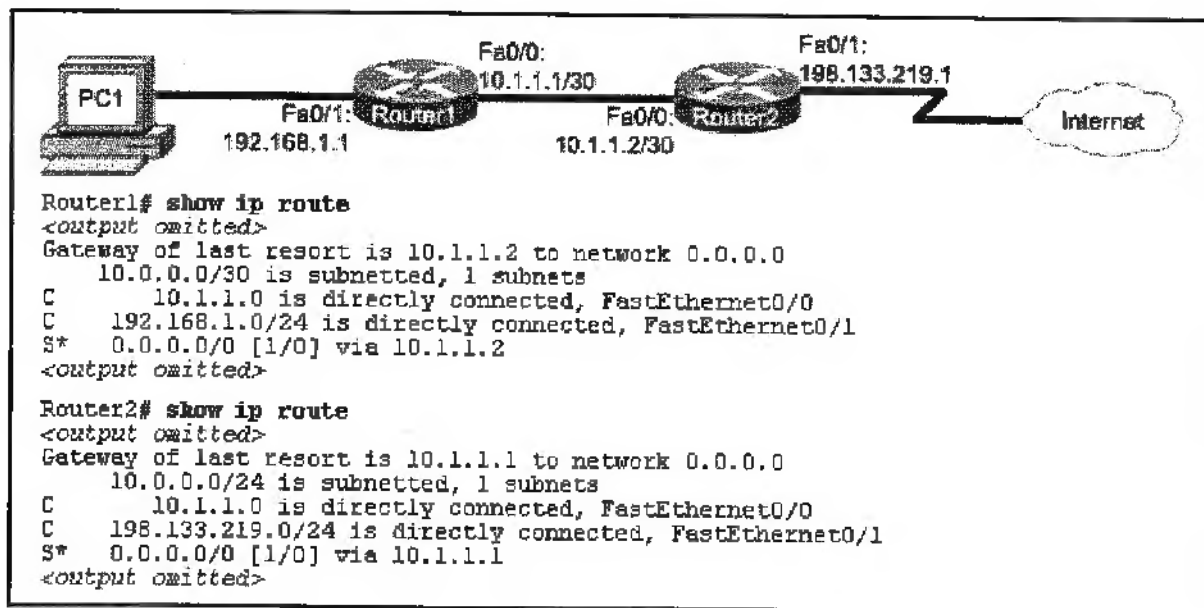
[5 Marks]

**Question 3 [10 Marks]**

- (a) What is the purpose of a default route? With an example of network topology, write a command for setting up a default route. [3 Marks]
- (b) List **THREE** characteristics of link state routing protocols. [3 Marks]
- (c) The topology of the Thundercloud network is displayed below, along with the routing table of the Thundercloud routers.

Thundercloud administrator is troubleshooting PC1 connectivity to the internet by pinging google.com. The administrator notices that PC1 is unable to access the Internet.

**Continued ...**



- i. What is the cause of the problem?
- ii. Examine and explain the ICMP messages exchanged during the ping test.
- iii. How can this problem be corrected?

[1 + 2 + 1 = 4 Marks]

#### Question 4 [10 Marks]

- (a) List **TWO** general recommendations regarding the placement of access control lists?

[2 Marks]

- (b) Thundercloud administrator wants to filter FTP access sourced from 192.168.99.192/27 network yet allows all other traffic to pass. The administrator does not care about the destination network. The administrator enters the following commands on the router, yet FTP traffic coming from the 192.168.99.192/27 network is still allowed. Identify the problems and make the corrections to the commands.

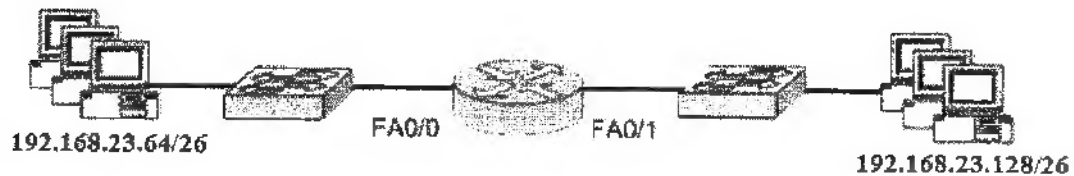
```

Router(config)#access-list 100 deny tcp any 192.168.99.192 0.0.0.31 eq 22
Router(config)#access-list 100 deny tcp any 192.168.99.192 0.0.0.31 eq 23
Router(config)#access-list 100 permit ip any any
Router(config)#interface serial0/0
Router(config-if)#ip access-group 100 in

```

[4 Marks]

Continued ...



- (c) Thundercloud administrator has decided that one workstation with IP address of 192.168.23.70 from Openstack subnet should be denied access to a server in Azure subnet. Write ACL commands that are required to prevent only this workstation from accessing the server while allowing all other traffic to flow normally. On what interface and what direction should you apply it? The IP address of the server is 192.168.23.150.

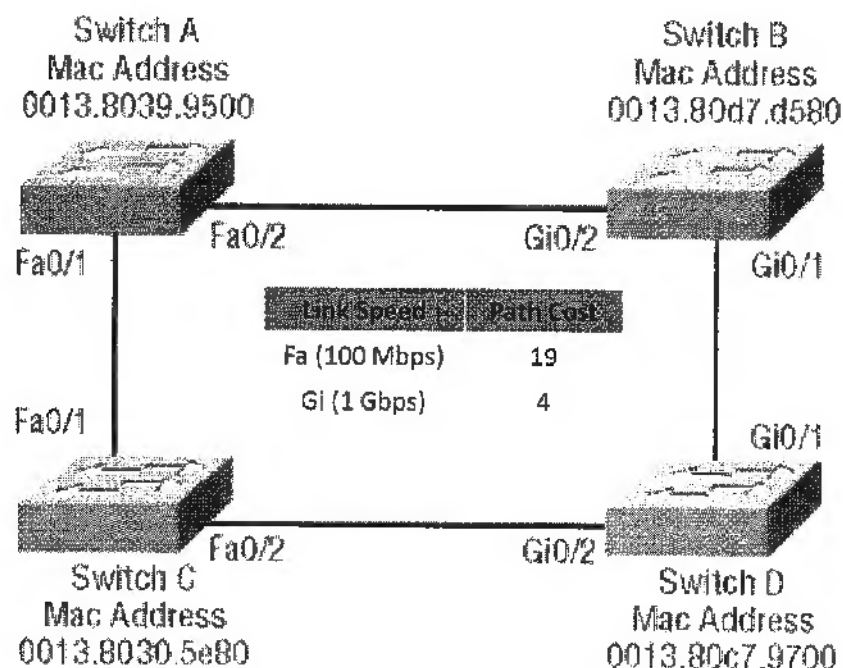
[4 Marks]

### Question 5 [10 Marks]

- (a) Describe how a switch learns an address.
- (b) What is the purpose of the spanning tree protocol in a switched LAN?
- (c) Four Thundercloud switches are shown below:

[3 Marks]

[2 Marks]



Continued ...

- i. Which switch will be elected as the spanning tree root bridge?
- ii. Assuming that all switches are set to default configuration, by using the following table, identify root ports (RP), designated ports (DP) and non-designated ports (NDP) when spanning tree has fully converged.

Switch	Switch Interface	RP/DP/NDP
Switch A	Fa0/1	
	Fa0/2	
Switch B	Gi0/1	
	Gi0/2	
Switch C	Fa0/1	
	Fa0/2	
Switch D	Gi0/1	
	Gi0/2	

[1 + 4 = 5 Marks]

**Question 6 [10 Marks]**

- (a) What are the differences between packet and circuit switching?  
[4 Marks]
- (b) What is Point-to-Point Protocol (PPP)?  
[2 Marks]
- (c) Describe **TWO** PPP authentication options.  
[4 Marks]

**End of Page**